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doubt, whether larger springs could be made to show results which would even approach these figures; and on this account the experiments about to be tried might be looked for with some interest. — Mr. H. C. Lüders exhibited specimen of rolled and annealed phosphor-bronze of maximum ductility, and consequently of minimum tensile strength, and submitted the following data of the test thereof: length, 2"; diameter, 0.57"; subjected to a strain of 13,620 pounds, equivalent to 53,400 pounds per square inch; elongation, 70.5%; reduced area at point where fracture would occur, 0.3"; elastic limit, about 18,000 pounds per square inch. Hard-rolled rods, tested without turning off the surface, have shown a tenacity exceeding 90,000 pounds per square inch. — Mr. Howard Murphy presented for Mr. Louis C. Madeira, jun., the Record of American and foreign shipping, containing an interesting set of drawings for the details of construction of iron ships. — Mr. Percival Roberts, jun., gave some account of the results of experiments, now being conducted by Mr. James Christie at Pencoyd, upon the relative elasticity of iron and steel structural shapes.

NOTES AND NEWS.

WE noticed a fortnight ago the presentation of the Lyell medal of the Geological society of London to Professor Leidy; and we now learn that the council of the society at the same time awarded to Mr. Leo Lesquereux the sum of twenty pounds sterling from their Barlow Jameson fund, in recognition of the value of his services to geological science. The great extent and value of Mr. Lesquereux's contributions to our knowledge of the fossil flora of North America are well known, and will be still better appreciated when his volume on the tertiary plants, now completed, but not yet distributed, shall be issued.

— Any contributions that American biologists may feel disposed to make toward the Hermann Müller foundation, referred to in our last issue, can be sent direct to the treasurer of the committee, Wilhelm Thurmman, Lippstadt, Germany, or they will be received for and forwarded by Professor William Trelease, Madison, Wis.

— The death (March 2) is announced of Isaac Todhunter, whose name has been a terror to the average college-student of the present generation. He was born at Rye in 1820, and was senior wrangler in 1848. A large portion of his energy was devoted to the production of the invaluable mathematical text-books and treatises which are so well known.

— Capt. Bernard, in the course of a journey into the far interior of Algeria, twenty kilometres north of the Bou Saada River, found a singular flat-topped butte whose elongated rocky summit rises sixty-five feet vertically from the talus which crowns its sloping base. This place, called by the Algerians 'El Gueliaa,' forms a rocky table one hundred and seventy-five feet wide by six hundred feet long, reached by a stairway cut on the northern side. On this plateau has been erected a structure, still in a remarkable state of

preservation, and, from the nature of its materials, apparently of Roman origin. On the east is a large rectangular stone building, containing eight or ten apartments opening upon an inner court. North of this building a vaulted cistern is dug in the rock: sixty feet to the west are two others, side by side, one vaulted over, and the second open to the sky. It is very difficult to say how these cisterns were filled, as there are no springs, or traces of wells, in the vicinity. It was evidently a post established for some special purpose. At Mesaad oasis a hillock thirty or thirty-five feet high bears the broken remains of a Roman gate. The Arabs have tunnelled or ditched the hillock for brick-clay; showing, that beneath the Roman remains now so long abandoned, and over the beds of chalk, salty earth, and clay, which form the mound, there are abundant remains of an earlier occupation, apparently for a considerable period, by a race whose stone weapons and tools, fragments of stone and ivory, and other rejectamenta, are their only memorial.

— The expedition charged by Russia with the task of exploring the ancient bed of the Oxus has concluded its work. The former path of the stream has been subjected to careful levelling from Khiva to the Caspian; proving that it is possible to turn the river into its old course only at the expense of a canal two hundred kilometres long, which is equivalent to a permanently adverse decision on its practicability.

— Signor F. P. Moreno, director of the anthropological museum of Buenos Ayres, was authorized in 1882 to undertake a journey into the interior of Bolivia for purposes of anthropological study. He now reports having visited the provinces of Cordoba, San Luis, and Mendoza as far as the slope of the Andes. During a year's travel he has studied the modern, as well as the traces of the former, inhabitants, and has exhumed in many places bones, weapons, inscriptions, and relics of burials, and has made plans and photographs of the remains of ancient villages. He believes he has obtained full material for a study of life in these regions before the Spanish conquest. He visited the whole extent of the so-called road of the Incas to the Uspallata Pass, when compelled to return by the advent of winter, and has pretty thoroughly explored the range of the same name.

— The material accumulated by the Krause brothers in Alaska, 1881-82, is being rapidly worked up. In the *Botanisches centralblatt* (Cassel, 1883, Nos. 41-43) Karl Müller publishes an account of the mosses of the Chukchi peninsula. He finds twenty-eight new out of seventy-five species collected, certainly a rather unusually large proportion. One of these, a cleistocarpous form allied to *Voitia*, is erected into a new genus by the name of *Krauseella*.

Dr. Hartlaub, in Cabanis's journal, enumerates the birds obtained at the head of Lynn Canal, near the mouth of the Chilkat River, S. E. Alaska. *Lagopus leucurus*, *Certhia familiaris*, *Dendroica Townsendi*, *Sialia arctica*, *Chrysomitris pinus*, *Sphyrapicus ruber*, and *Tinnunculus sparverius* are noted as new to the region, though several of them may be only occa-

sional stragglers. The last mentioned has been observed on the Aleutian Islands.

In a late number of the *Deutsche geographische blätter*, Dr. Arthur Krause gives an interesting account of the houses of the Tlinkit Indians, their methods of building, tools used, and modes of ornamentation. Iron was found at a very early date in the possession of the natives, but was without doubt procured by them from the Russian and Hudson Bay traders by a long but rapidly executed series of transfers from one band or tribe to another. In one year measles penetrated from British Columbia to Fort Yukon and beyond, and trade would take little longer.

Dr. Arzruni has reported on the minerals of the expedition in a paper read before the Gesellschaft für vaterländische kultur in Breslau. The rocks from widely separated portions of the territory indicated analogous geological structure, being chiefly of the oldest crystalline formations,—rocks belonging to the granite series, crystalline schists, and late tertiary volcanic ejections. Remarkable garnets were obtained from Fort Wrangell, and various gold ores from near Sitka.

—The Natural science association of Portland, Ore., has secured new quarters, and hopes soon to establish yearly courses of lectures. The annual address was given Feb. 6, by Prof. L. F. Henderson.

—Dr. D. G. Brinton, the well-known archeologist, has been elected professor of ethnology and archeology by the council of the Academy of natural sciences of Philadelphia, and is making arrangements for the delivery of a course of lectures on his specialty in connection with the department of instruction of the academy during the coming spring.

—Four scientific conventions are to be held in Washington in May,—that of the American medical association, the American surgical association, the American climatological association, and the American fish cultural association.

—The success of the borings for artesian wells at Denver, Col., seems to have encouraged the people of Montana to experiment in the same direction. A boring at Miles City, Montana Territory, on the Yellowstone River, struck flowing water at a depth of three hundred and forty-one feet. An analysis of the water proves it to contain more than sixty grains of carbonate of soda to the gallon. A second well has reached the depth of three hundred and twenty-one feet, without a flow of water. At Billings, nearly a hundred and fifty miles farther up the Yellowstone, a boring has been carried to a depth of nine hundred feet without success, but will be carried still farther down. At Helena, also, a well is being sunk; but work has been postponed until spring.

—Prof. W. Kitchen Parker gave the first of a course of nine lectures on mammalian descent, at the College of surgeons on Feb. 4. His remarks were of an introductory character, and were intended to aid the listener in comprehending the substance of the subsequent lectures. The subject of descent was viewed

from an embryological and purely evolutionary standpoint. The classification of the mammalia employed is that now generally in vogue among mammalogists, the class being divided into Prototheria, Metatheria, and Eutheria. It is to the consideration of the first and second of these sub-classes, and to the Ineducabilia among the Eutheria, that the majority of the lectures will be devoted. The lecturer expressed his belief in the former existence of a group of generalized forms, such as Huxley has described under the name of Hypotheria. Professor Parker's style is simple and pleasing, and, in the introductory lecture, highly poetical. His sentences are replete with biblical allusions, some of which border on the comical. He described the Metatheria, for example, as looking from the summit of their Pisgah toward the promised land of the Eutheria, into which they were never to enter.

—Mr. W. F. Denning was led to conclude, from certain markings discerned on the planet Mercury in the mornings of November, 1882, that its rotation-period is not accurately given in the text-books; the period of twenty-four hours derived from the observations of Schroeter and Harding, about the beginning of the present century, being apparently about one hour too short. His suspicion is now confirmed by a communication from Signor Schiaparelli, who has been very successful during the last two years in observing definite markings on Mercury, and who pronounces the planet's period of rotation, as usually given, 'very far from the truth.' His forthcoming memoir on Mercury is expected to give some very interesting details of the physical aspect of this planet. The necessarily unfavorable circumstances attending all observations of Mercury, make it not to be wondered at that little or nothing is known of its surface-phenomena; but Mr. Denning regards it as obvious that the markings are of a fairly distinct character, and likely to prove a fruitful subject for further investigation. He remarks that the general aspect of the disk, as seen in November, 1882, reminded him forcibly of Mars; and the definite nature of the spots may therefore be readily imagined. He thinks the dark spots and shadings may be regarded as fairly permanent, while the white spots are influenced by rapid variations.

—The following, from *Nature*, will interest our readers:—

On Tuesday afternoon [Feb. 5] at Oxford, convocation witnessed in the Sheldonian theatre the most exciting scene that has been enacted in the university since the opposition to Dean Stanley as select preacher. Last summer convocation passed by a small majority a vote of ten thousand pounds for a new physiological laboratory. The vote was opposed by the anti-vivisectionists, and by some on the ground of economy. A memorial got up by Mr. Nicholson against vivisection having produced no effect on the council, the opponents of Professor Burdon Sanderson determined to oppose the decree brought before convocation on Tuesday for empowering the sale of stocks for the ten thousand pounds voted last

June. The decree was supported by the dean of Christ church, Dr. Acland, and the warden of Keble, and was opposed by Professor Freeman and Mr. Nicholson. After a stormy debate, the vote was carried by a hundred and eighty-eight votes against a hundred and forty-seven. The result was received with enthusiasm, and Oxford is to be congratulated on it. To what shifts Dr. Sanderson's opponents were put may be seen from what the *Times* calls 'the most astonishing speech' of Mr. Freeman the historian, "who afforded a curious example of the confusion of thought into which even intelligent men may be led by an over-indulgence in sentiment. It would be as reasonable, said Mr. Freeman, for the historian to illustrate the festivities of Kenilworth by an actual bull-baiting, as for the physiologist to experiment upon living animals. Mr. Freeman, in his zeal to establish the scientific character of the historian, forgets the difference between description and discovery, and ignores the fact that the physiologist, at least under the existing law, makes his experiments, not for the instruction of pupils, but with a view to discover what is as yet unknown. A more curious article in the indictment against vivisection we have not met with since the celebrated letter in which Sir George Duckett told the royal commission that he had no evidence to give, but that he considered vivisection 'an abomination introduced from the continent, going hand in hand with atheism.'" The *Times*, in its leader on the subject, treats it sensibly and moderately. "All those who are open to argument have been long ago convinced that Science cannot proceed on her beneficent way without the aid of experiments, some of which must be painful; and those who are not open to argument, and those who believe, like some of the wiseacres whose opinion is on record, that 'medical science has arrived probably at its extreme limits,' are not likely to be convinced by any thing that can be said or by any facts that can be brought against them. Parliament, on the recommendation of one of the strongest royal commissions ever appointed, has legislated in the matter, and physiological experiment is now under limitations as severe as it is possible for it to be consistently with any kind of progress in discovery. Abuses are of the rarest occurrence. Men like Dr. Sanderson are not only humane, but they are conscious that public opinion is awake on the matter; and their discretion as to what should be done, and what should not, is absolutely to be trusted. It is to be hoped that the sensible action of convocation will not only encourage the Waynflete professor to proceed as his scientific conscience may guide him, but will convince the well-meaning but irrational opponents of scientific freedom that further action on their part would be not only vexatious, but unsuccessful."

—Professor Nehring has reported to the Berlin anthropological society the discovery, in a cave near the village of Holzon in Brunswick, of bones which show proofs of cannibal practices. It is the first evidence discovered, that a race of anthropophagi ever existed in Germany. The bones were not fully calcined,

and had evidently been chopped to obtain the marrow. As a still greater proof of cannibalism, it was shown that the bones were thrown in a heap, as if cleared after a meal. Other objects of interest, such as rough bronze ornaments, were found in the cave; and, on excavating a lower stratum of the floor, bones of animals of the glacial period were found, showing the existence of the cave at that time. In the subsequent discussion, Professor Virchow raised some objections to the cannibal theory.

—A society with Dr. C. F. Millspaugh as president has been formed at Binghamton, N.Y., under the title of the Erosophian microscopical society. It has some forty or fifty members.

—*Papilio*, on its removal to Philadelphia, no longer appears as 'the organ of the New York entomological club;' but in other respects it does not differ noticeably, as the new editor, Mr. Aaron, has evidently endeavored to preserve the character of the journal, even to typographical details. As is fitting, considering its name, it is still 'devoted exclusively to Lepidoptera,' and renders the lovers of those insects good service.

—A memorial volume of the scientific papers of the late W. A. Forbes, at the time of his death prosector of the Zoological society of London, is to be published, through a committee consisting of Professors Flower and Bell, and Messrs. Johnston, Mivart, and Sclater, at the price of one guinea. Mr. Sclater will edit the volume, Mr. Johnston will add a biography, and Mr. F. Jeffrey Bell (5 Radnor Place, Gloucester Square, London) will act as secretary and treasurer.

—In his presidential address before the Biological society of Washington, on "Certain phases in the geological history of the North-American continent, biologically considered," Dr. C. A. White shows how important to a knowledge of the evolution of the continent is a study of terrestrial and fresh-water faunas and floras of geological times.

—Dr. C. B. Reichert, for many years director of the anatomical museum at Berlin, died in that city, Dec. 21, 1883.

—Prof. H. Carvill Lewis, A.M., recently appointed lecturer on geology and paleontology at Haverford college, gave his first lecture last week Wednesday, upon 'The foundation-stones of Pennsylvania.' This week's subject was 'The ancient life-history of the Chester valley;' and in following weeks 'The origin of the Pennsylvania mountains,' 'Volcanic action in Chester and Montgomery counties,' 'The geology of Haverford and its vicinity,' 'The glacial epoch in Pennsylvania,' will be treated. The lectures are open to the public.

—The seventh Saturday lecture in the National museum was on Feb. 16, by Prof. E. D. Cope, on the 'Origin of human physiognomy and character,'—a discourse the main features of which have already been published in the *American naturalist*. On Feb. 23 Mr. John Murdock, late of the signal-service party at the Oglala station, North Alaska, gave a very vivid account of 'Eskimo life at Point Barrow.'